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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/987,259	11/14/2001	Toshitaka Aoyagi	401452	6838

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LEYDIG VOIT & MAYER, LTD  
700 THIRTEENTH ST. NW  
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WASHINGTON, DC 20005-3960

EXAMINER
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JACKSON, CORNELIUS H

ART UNIT	PAPER NUMBER
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2828

DATE MAILED: 08/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/987,259

Applicant(s)

AOYAGI ET AL.

Examiner

Cornelius H. Jackson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.



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**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Acknowledgment***

1. Acknowledgment is made that applicant's Amendment, filed on 06 June 2003, has been entered. Upon entrance of the Amendment, claim 1 was amended. Claims 1-16 are now pending in the current application.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The

Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 1 recites the broad recitation that  $L$  does not exceed  $260\text{ }\mu\text{m}$  and  $\kappa$  is at least  $150\text{ cm}^{-1}$ , and the claim also recites  $5.6 > \kappa L > 3.0$  which is the narrower statement of the range/limitation, since all the values of  $\kappa$  or  $L$  given above when multiplied together does not yield the result  $5.6 > \kappa L > 3.0$ . Also when  $\kappa$  equal  $150\text{ cm}^{-1}$ , the value of  $L$  must be least than  $3.73\text{ m}$  and greater than  $2\text{ m}$ ; therefore, exceeding  $260\text{ }\mu\text{m}$  ( $0.00026\text{ m}$ ). Claims 2-16 are rejected for depending on an indefinite base claim.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (5960023) in view of Suzuki et al. (5347546) and/or Nakajima et al.

(5412496). Takahashi teaches a semiconductor laser device **Fig. 7** comprising an InP

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substrate of a first conductivity type **701**; a first cladding layer **702** of the first conductivity type disposed on the InP substrate **701**; an active layer **703** disposed on the first cladding layer **102** and having uniformly flat upper and lower boundary surfaces in an optical waveguide direction; a second cladding layer **705** of a second conductivity type disposed on the active layer **703**; and a diffraction grating layer **704** having a phase-shifted structure **700a** in the optical waveguide direction, between the active layer **703** and one of the first **702** and second **705** cladding layers, wherein the diffraction grating layer has a length  $L$  in the optical waveguide direction not exceeding  $260\text{ }\mu\text{m}$ . Takahashi fails to teach the active layer includes a multiple quantum well structure and mean coupling factor ( $\kappa$ ) of a diffraction grating layer being at least  $150\text{ cm}^{-1}$  and that the product of  $\kappa L$  satisfies  $5.6 > \kappa L > 3.0$ . Nakajima et al. teach that the active layer includes a multiple quantum well structure **see col. 4, line 67-col. 5, line 2** and it is desirable for the product of  $\kappa L$  to fall within the given range **see col. 3, lines 44-47**; therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select the desired properties of elements within the invention on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. Also, since Takahashi teaches each and every structural element of the present invention, it has been held “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Regarding claims 2-8, it has been held that “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Regarding claims 9-16, Takahashi teaches the semiconductor laser device has a highly-refractive portion **700a** of the diffraction grating layer has a length longer than that of a low-refractive portion of the diffraction grating layer in the optical waveguide direction.

### ***Response to Arguments***

7. Applicant's arguments filed 06 June 2003 have been fully considered but they are not persuasive.

Applicant arguments are as follows:

a. Takahashi fails to teach a multiple quantum well structure,  $\kappa$  being at least  $150\text{ cm}^{-1}$ , and  $5.6 > \kappa L > 3.0$ .

b. Nakajima fails to teach  $\kappa$  being at least  $150\text{ cm}^{-1}$ .

Examiner reply to applicant's arguments are as follows:

a. A multiple quantum well structure is well known in the laser art and would have been an obvious design choice for the active layer as shown by Nakajima.

Nakajima, as combined with Takahashi, teach the product of  $\kappa L$  as being approximately 4, it would be within the skill of one ordinary in the art to use the length (L), *given by*

*Takahashi as 250  $\mu$ m, and the product of  $\kappa$ L, given by Nakajima as approximately 4, to find the value of  $\kappa$ . See also 112, rejection above.*

b. See reply above.

### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cornelius H. Jackson whose telephone number is (703) 306-5981. The examiner can normally be reached on 8:00 - 5:00, Monday - Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7722 for regular communications and (703)308-7721 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.



chj  
August 24, 2003



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